REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 25-48 are presently pending in the present application. Claims 46-48 have been withdrawn, but remain pending as they depend from elected linking claims. Claims 25-30, 32-37, and 39-48 have been amended by way of the present Amendment. No new matter has been entered.

In the outstanding Official Action, the specification was objected to as failing to provide proper antecedent basis for the subject matter recited in Claims 30, 31, 33-41, and 43-45. Accordingly, the specification has been amended on page 10 to provide antecedent basis for the subject matter recited in Claims 30, 31, 33-41, and 43-45. No new matter has been entered, but rather the specification is merely being amended to include a description of the subject matter in the claims. Thus, the Applicants request the withdrawal of the objection to the specification.

Claims 25-45 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 33, 41, and 42 have been amended to change "can be" to "is." Claim 25 has been amended to clarify the recitation therein including the recitation of "heating the substrate..." and a recitation of the manner in which the thin film is deposited on the substrate. Also, Claim 25 has been amended to remove of the phrases "introduced gas flow," "titania-containing," and "to improve film properties and film growth

rates." The Applicants submit that the amended claims are definite. Accordingly, the Applicants request the withdrawal of the indefiniteness rejection.

Claims 25-29, 32-36, and 39-44 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rzad et al. (U.S. Patent No. 5,156,882) in view of Barnes et al. (U.S. Pub. No. 2005/0098115). Claims 30 and 31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rzad et al. in view of Barnes et al. and further in view of Horiikie et al. (U.S. Patent No. 5,185,132). Claims 37 and 38 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rzad et al. in view of Barnes et al. and further in view of David (U.S. Patent No. 6,197,120). For the reasons discussed below, the Applicant traverses the obviousness rejection.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP §2143 include (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the reference (or references when combined) must teach or suggest all of the claim limitations.

The Applicants submit that a *prima facie* case of obviousness has not been established in the present case because there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings to arrive at the claimed invention, and there was no reasonable expectation of success. In fact, the cited references teach away from such a

combination, and the proposed combination would render the prior art unsatisfactory for its intended purpose (see MPEP 2143.01 VI).

Claim 25 recites a method for depositing a thin film on a substrate comprising heating the substrate at a temperature below 250°C; introducing a pre-vaporized reactive titania CVD precursor into a gas flow flowing through a coating region; and applying energy to generate an atmospheric pressure glow discharge plasma in the coating region and using the atmospheric pressure glow discharge plasma as a major source of reaction to deposit the thin film on the substrate heated at the temperature below 250°C.

The Rzad et al. reference is cited for all of the features recited in Claim 25 including the heating of the substrate to a temperature below 250°C, with the one exception of the use of an atmospheric pressure glow discharge plasma. For that feature, the Official Action cites the Barnes et al. reference.

The Rzad et al. reference describes a method of preparing transparent plastic articles having an improved protective stratum thereon. The Rzad et al. reference indicates that the invention described therein "is directed to a process that is based on plasma enhanced chemically vapor deposited (PECVD) protective stratum that not only provides a high adherence and UV protection but also improves abrasion resistance while reducing manufacturing costs by using a (PECVD) process for depositing various layers." (Col. 1, line 64, through col. 2, line 2.) The Rzad et al. reference repeatedly and consistently states that the deposition of the layers of the protective stratum is accomplished by PECVD (see, e.g., col. 5, lines 61-62), and that the protective stratum is formed in a reactor chamber that "**must be capable of being substantially evacuated**, i.e., to a pressure of less than or equal to about

1.0 milliTorr" (col. 6, lines 31-36, emphasis added). The Rzad et al. reference also states that "[c]hamber pressures **as required for the process of the present invention** range from about 10 milliTorr to about 10 Torr." (Col. 7, lines 28-30, emphasis added.)

The Rzad et al. reference notes that:

> The following general statement regarding the operation of PECVD for the present invention applies to the deposition of the interfacial material, the UV absorbent material and the abrasion-resistant material. When an electrical discharge is produced at low pressure in the film-forming reactants, the reactants become ionized, forming a plasma. A portion of the material is in the form of reactive species, such as ions, electrons, and atomic free radicals generated in the plasma prior to formation of the film over or upon the substrate. A distinct advantage of PECVD over conventional chemical vapor deposition processes lies in the fact that the applied electric field enhances reactive species formation, thereby permitting the use of deposition temperatures which are low enough to prevent damage to substrates such as polycarbonates, i.e., temperatures less than about 130°C. (Col. 6, lines 4-20.)

Thus, the Rzad et al. specifically utilizes a PECVD process at low pressure in order to obtain certain advantages, such as low deposition temperature; however, the Rzad et al. reference also teaches that the PECVD process described therein requires the use of an evacuated reactor chamber in order to carry out the process disclosed therein and achieve those advantages.

The Barnes et al. reference notes in the Background of the Invention section thereof a PECVD process that requires pressurization, evacuation, and re-pressurization of the processing chambers used to perform the process. (See paragraphs [0001]-[0005].) The Barnes et al. reference acknowledges that a significant amount of time is needed to evacuate

and re-pressurize the processing chambers, etc., and therefore discards the use of a PECVD process (and other pressurized, non-atmospheric processes as discussed in paragraph [0038]) and instead proposes the use of an atmospheric pressure vapor deposition process such as an atmospheric pressure chemical vapor deposition (APCVD) process. (See paragraphs [0006] and [0019].) However, as discussed in the Introduction section of the present application, a major limitation to the use of thermal APCVD processes has, prior to the present invention, been the substrate temperature required to achieve target growth rates and target thin film properties. The introduction section of the present invention notes that typical substrate temperature requirements are over 500°C and can reach over 1000°C. (See page 2, lines 6-9, of the present application.) And, notably, the Barnes et al. reference describes the heating of the substrate to temperatures ranging from about 500°C to as high as about 1600°C.

Thus, prior to the present invention, one of ordinary skill in the art would not have combined the teachings in the Rzad et al. reference and the Barnes et al. reference to arrive at the claimed invention. The Rzad et al. reference clearly teaches that the PECVD process described therein must be performed in a reactor chamber in a substantially evacuated state in order to obtain certain advantages, such as low deposition temperature. Thus, at the time of the present invention, one of ordinary skill in the art would not have modified the process taught in the Rzad et al. reference to utilize an atmospheric process, as in the Barnes et al. reference, since this would be directly contrary to the teachings in the Rzad et al. reference and since such a modification/combination would render the invention described in the Rzad et al. reference unsatisfactory for its intended purposes (see MPEP 2143.01 V.), as this reference clearly teaches that a substantially evacuated state is **required** in order to carry out

the invention therein. Also, at the time of the present invention, one of ordinary skill would not have had a reasonable expectation of success in making such a combination, as both references discuss the inventions therein as though atmospheric processes and low temperature processes are mutually exclusive of one another.

The Official Action suggests that it would have been obvious to modify the invention taught in the Rzad et al. reference "to include using an atmospheric pressure, since such a modification would result in suitable layers of titanium oxide as taught by Barnes at 0036 and one would reasonably expect to achieve the benefits taught at 0024 of Barnes resulting from us of atmospheric pressure." (Page 8.) However, making such a modification of the Rzad invention would completely ignore all of the teachings in the Rzad et al. reference that require the use of a substantially evacuated reactor chamber in order to carry out the invention therein. Also, the Barnes et al. reference does not teach or suggest that the process described therein can be performed at the low deposition temperatures described in the Rzad et al. reference, and thus it is not reasonable for one of ordinary skill in the art at the time of the invention to expect to achieve the benefits described in paragraph [0024] of the Barnes et al. reference if such changes are made.

Accordingly, the Applicants respectfully submit that Claim 25 would not have been obvious to one of ordinary skill in the art at the time of the present invention. The Applicants submit that a *prima facie* case of obviousness cannot be established with respect to Claim 25 for the reasons set forth above. Therefore, the Applicants respectfully request the withdrawal of the obviousness rejection of independent Claim 25.

The dependent claims are considered allowable for the reasons advanced for independent Claim 25 from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed nor suggested by the applied references when those features are considered within the context of Claim 25.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully Submitted,

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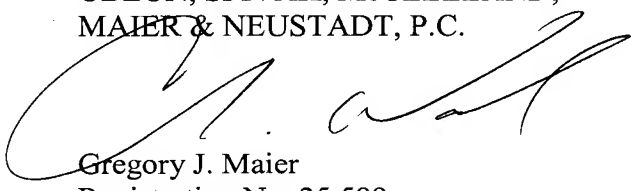

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